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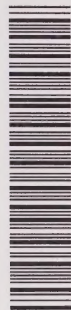
Cod Liver Oil for Poultry

Its Value for Laying and Breeding Stock

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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
PAMPHLET No. 131—NEW SERIES

THE EXPERIMENTAL FARMS BRANCH

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Published by direction of the Hon. Robert Weir, Minister of Agriculture,
Ottawa, 1931

Box 100
100
100

COD LIVER OIL FOR POULTRY

Where birds are closely confined during winter such as in the case in most parts of Canada, they receive very little direct sunshine, and with the rations usually fed, poultry frequently do not receive all the vitamins they require. Minerals such as calcium and phosphorus are required in comparatively large quantities by laying hens and pullets for the manufacture of eggs and egg shells. The digestion and assimilation of minerals, especially of calcium, require one of two things: an abundance of direct sunshine or an abundance of vitamin D. Cod liver oil is rich in vitamin D and is one of the reliable sources of this type of feed.

Feeding tests were commenced in 1928 to determine the effect on the production and hatchability of eggs of adding vitamin D in the form of cod liver oil to the regular poultry ration. The tests were repeated during the hatching seasons of 1929 and 1930. Sixteen pens with twelve females in each were used in each test. The birds used were all Barred Rock pullets that were bred and reared on the Farm. The basal ration consisted of wheat, oats, barley, and yellow corn in the scratch grain, and oat chop, barley chop, corn meal, and meat meal in the dry mash. Salt and charcoal were included in the dry mash, and grit and oyster shells were fed in self-feeders. In two of the tests water was supplied for drink and in one test buttermilk was supplied. Eight pens received cod liver oil daily in a moist mash and the remaining eight pens were used as check pens and did not receive cod liver oil, though they received the same basal ration and the moist mash.

The cod liver oil was fed at the rate of one per cent, two per cent, three per cent, and four per cent by weight of the dry meals used in making the moist mash. One teaspoonful of cod liver oil was equivalent in weight to one per cent of the dry meals used for the daily moist mash for twelve birds. Two pens each season were fed cod liver oil at the rate of one per cent, two pens at the rate of two per cent, two pens at the rate of three per cent, and two pens at the rate of four per cent. For each pen receiving cod liver oil there was a duplicate pen or check pen that did not receive oil.

The feeding tests were commenced each year in January, or three to four weeks before the males were placed in the breeding pens, and were continued until the end of April. During the first half of each test the male birds were left in the pens where they were originally placed. In order to avoid the effect of individuality of the male birds on fertility and hatchability of eggs, the males were moved to a different pen daily during the last half of each test.

The Effect of Cod Liver Oil on Egg Production

Records were kept of the number of eggs laid by individual birds in each pen during the tests. These records show that the cod liver oil fed pens produced an average of 11.5 more eggs per bird or 138 more eggs per pen of twelve birds during the average test period of one hundred and twenty days. The increase in production was uniform throughout the test and all pens receiving oil produced more eggs than the birds in their corresponding check pens. Table 1 shows the average egg production of the pens that received cod liver oil at the rate of one per cent up to four per cent, and the production of the birds in the check pens for the three tests.

TABLE 1.—THE EFFECT OF COD LIVER OIL ON EGG PRODUCTION

Treatment	Average number of eggs laid by 12 birds in 120 days			
	Cod liver oil pens	Check pens	Increase in number of eggs in favour of cod liver oil	Per cent increase in favour of cod liver oil
	eggs	eggs	eggs	%
Fed 1 per cent cod liver oil.....	710	616	94	15.2
Basal ration only—check pens.....	713	612	101	16.5
Fed 2 per cent cod liver oil.....	688	551	137	2.8
Basal ration only—check pens.....	781	561	220	39.2
Fed 3 per cent cod liver oil.....				
Fed 4 per cent cod liver oil.....				
Basal ration only—check pens.....				
Average for all pens.....	723	585	138	23.5

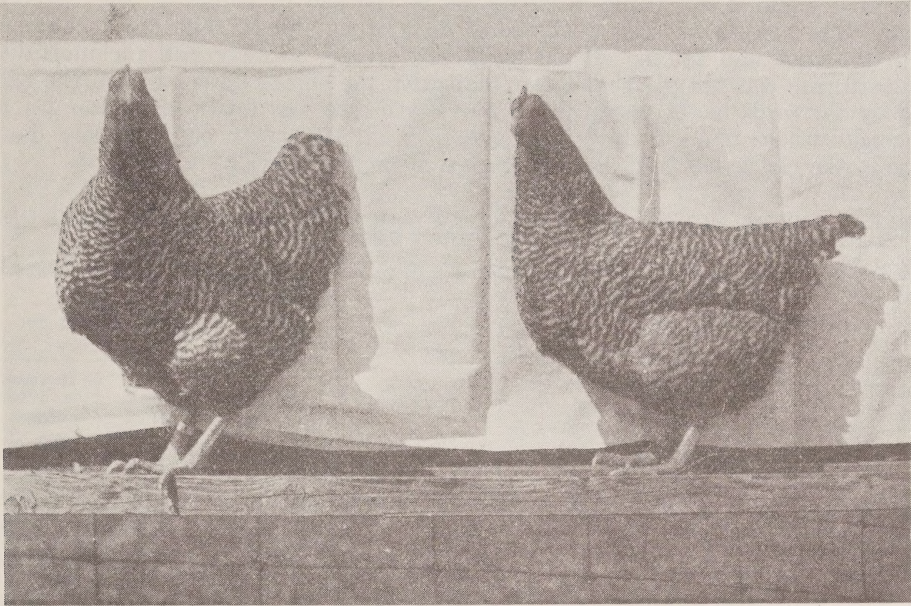
The eggs from individual birds were weighed weekly and the average weight of eggs computed for each pen during the test period. Table 2 shows the effect of cod liver oil on the weight of eggs produced. The difference in average weight of eggs laid by the oil-fed birds and by those by the birds in the check pens indicates that cod liver oil has little if any influence on the weight of eggs produced.

TABLE 2.—THE EFFECT OF COD LIVER OIL ON WEIGHT OF EGGS PRODUCED

Treatment	Average weight of eggs in ounces per dozen		
	Cod liver oil pens	Check pens	Increase or decrease in cod liver oil pens
	oz.	oz.	oz.
Fed 1 per cent cod liver oil.....	23.75	23.55	0.20
Basal ration only—check pens.....	24.00	23.65	0.35
Fed 2 per cent cod liver oil.....	23.75	23.85	—0.10
Basal ration only—check pens.....	23.90	24.10	—0.20
Fed 3 per cent cod liver oil.....			
Fed 4 per cent cod liver oil.....			
Basal ration only—check pens.....			
Average for all pens.....	23.85	23.78	0.07

The Effect of Cod Liver Oil on Fertility and Hatchability of Eggs

Every egg laid during the test was marked with the leg band number of the bird that laid it. Records were kept of the fertility and hatchability of eggs produced by birds in each pen. The eggs from each bird were hatched in separate compartments in specially constructed pedigree hatching trays. Table 3 shows the fertility and hatchability of eggs laid by the oil-fed birds and by the birds in the check pens. One male bird was used in each pen of twelve females and the per cent fertile of all eggs laid was on the average higher than where larger matings are used. An average difference of approximately three per cent in favour of the oil-fed pens is shown. The increase was not uniform throughout the test, and the small difference in the average fertility is insufficient to justify feeding cod liver oil, where small matings are used, for the purpose of increasing fertility.



After five months of winter egg production.

The hatching results showed a considerable increase in favour of feeding cod liver oil. An average of fifteen more chicks were hatched from each hundred eggs laid by the oil-fed birds than from the eggs laid by the birds that did not receive oil. In both the percentage of total eggs hatched, and of fertile eggs hatched, there were shown uniform and appreciable increases due to the addition of cod liver oil to the ration.

TABLE 3.—THE EFFECT OF COD LIVER OIL ON FERTILITY AND HATCHABILITY

Treatment	Per cent eggs fertile	Per cent total eggs hatched	Per cent fertile eggs hatched
	%	%	%
Average pens 1 and 2 (1 per cent cod liver oil).....	89.7	54.6	60.9
Average pens 9 and 10 (No cod liver oil).....	91.6	44.0	48.6
Average increase from feeding 1 per cent cod liver oil.....	—1.9	10.6	12.3
Average pens 3 and 4 (2 per cent cod liver oil).....	89.7	50.4	56.0
Average pens 11 and 12 (No cod liver oil).....	87.7	39.9	45.9
Average increase from feeding 2 per cent cod liver oil.....	2.0	10.5	10.1
Average pens 5 and 6 (3 per cent cod liver oil).....	92.2	58.1	63.0
Average pens 13 and 14 (No cod liver oil).....	74.6	31.1	48.8
Average increase from feeding 3 per cent cod liver oil.....	17.6	27.0	14.2
Average pens 7 and 8 (4 per cent cod liver oil).....	81.7	48.4	59.1
Average pens 15 and 16 (No cod liver oil).....	87.7	35.2	40.4
Average increase from feeding 4 per cent cod liver oil.....	—6.0	13.2	18.7
Average increase of all cod liver oil pens over check pens.....	2.9	15.3	13.8

The Effect on the Vitality of Chicks of Feeding Cod Liver Oil to the Parent Flock

Chicks hatched during the test periods were marked with numbered leg bands on being removed from the hatching trays. Records were kept of the mortality of chicks hatched from eggs laid by the birds in each pen until they

were five weeks old. Table 4 shows the percentage of chicks of the different groups that were alive five weeks after date of hatching. The chicks hatched from the eggs laid by the oil-fed birds had greater vitality and the mortality or death rate was ten per cent lower than with the chicks hatched from the eggs laid by the birds in the check lots. The death rate was lower in all the groups of chicks whose dams had received cod liver oil than with chicks whose dams were in the check lots and did not receive oil in their ration.

TABLE 4.—THE EFFECT ON THE VITALITY OF CHICKS OF FEEDING COD LIVER OIL TO THE PARENT STOCK

Treatment	Per cent of chicks alive at five weeks		
	Cod liver oil pens	Check pens	Increase in favour of cod liver oil
	%	%	%
Fed 1 per cent cod liver oil.....	80.4		
Basal ration only—check pens.....		69.8	10.6
Fed 2 per cent cod liver oil.....	73.0		
Basal ration only—check pens.....		66.9	6.1
Fed 3 per cent cod liver oil.....	72.1		
Basal ration only—check pens.....		59.6	12.5
Fed 4 per cent cod liver oil.....	76.1		
Basal ration only—check pens.....		64.2	11.9
Average for all pens.....	75.4	65.1	10.3

Summary

Where birds are closely housed during winter and obtain very little direct sunshine, the use of cod liver oil is recommended as an addition to the regular poultry ration.

The value of cod liver oil in the ration for poultry depends on its vitamin D content, and only reliable tested brands should be purchased.

No difference in results was noticed where buttermilk was used in the regular ration instead of water.

The use of cod liver oil is shown to have increased egg production by approximately four eggs per bird per month.

The addition of cod liver oil to the ration had no influence on the average weight of eggs produced.

With small matings such as were used in this test cod liver oil did not appreciably increase the fertility of eggs during the hatching season.


The hatchability of eggs was increased by fifteen per cent by the use of cod liver oil.

The death rate of the chicks hatched was reduced by ten per cent by feeding cod liver oil to the breeding stock.

Cod liver oil may be fed daily in the moist mash or it may be mixed in the dry mash that is kept before the birds continuously.

Mixing cod liver oil with a flaky meal like bran and then mixing the oil-laden bran with the remainder of the meals will insure an even distribution of oil.

Cod liver oil tends to become rancid and unpalatable if left exposed to sunshine or heat. Large quantities of a mixture of meal and oil should not be kept on hand during the warm weather.



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